

## Calculus Warm Up #12-3

1. Find  $f'(x)$  for  $f(x) = \frac{1}{x - e^x}$

2. Differentiate  $f(x) = x^{x^3}$

## Calculus Warm Up #12-3

1. Find  $f'(x)$  for  $f(x) = \frac{1}{x - e^x} = 1(x - e^x)^{-1}$

$$f'(x) = -1(x - e^x)^{-2}(1 - e^x)$$

$$= -\frac{1 - e^x}{(x - e^x)^2}$$

$$= \frac{e^x - 1}{(x - e^x)^2}$$



2. Differentiate  $f(x) = x^{x^3}$

$$\ln y = x^3 \ln x$$

$$y \cdot \frac{1}{y} \frac{dy}{dx} = \left( x^3 \cdot \frac{1}{x} + 3x^2 \ln x \right) x^{x^3}$$

$$\frac{dy}{dx} = \underline{x^2} (1 + 3 \ln x) \cdot \underline{x^{x^3}}$$

$$\frac{dy}{dx} = x^{x^3+2} (1 + 3 \ln x)$$

Turn in:

Pink AP Rev. # 8 (for +1 EC)  
otherwise due Monday

HW:

Final Exam Rev WS #1 & 2

AP Review # 9

All due at your final exam.